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the widespread diffusion of the swine-plague bacilli is due to secondary invasion following infection with the hog-cholera bacilli. This, however, does not remove the grave significance of the swine-plague bacilli, which certainly cannot be ignored in the studies in this country of the diseases known as hog-cholera or swine-plague.

While differing in some points from the conclusions reached by the workers on this subject in the Bureau of Animal Industry, great pleasure is taken in recording the essential harmony of the observations here made with the facts which they have observed in their painstaking and creditable investigations of this difficult subject as reported since the year 1885.

Through the kindness of Dr. F. S. Billings, Professor Welch has had the opportunity of examining a number of cultures from diseased swine in Nebraska, chiefly direct cultures from the spleen. These in nearly all instances were pure cultures of the hog-cholera bacillus. Much confusion has resulted from Dr. Billings's attempt to identify this organism with that of Schweine-Seuche.

The former has had the opportunity of examining cultures of Schweine-Seuche and also of the Scandinavian swine-pest, obtained from the Hygienic Institute in Berlin. The organism in Schweine-Seuche cultures is apparently identical with the swine-plague bacillus which he has isolated. The organism in the swine-pest cultures is a different species of bacillus, and appears to resemble closely, if it is not identical with, the hog-cholera bacillus.

It is regarded of importance that the future study of swine affected with hog-cholera or swine-plague should be accompanied with a more thorough bacteriological examination of each case than has hitherto been customary. The mere production of a direct stab-culture from one organ, such as the spleen, or the mere inoculation of an animal with material from one organ, affords very incomplete and unsatisfactory information. So long as the relations of the two organisms — the hog-cholera bacillus and the swine-plague bacillus — to the diseases of swine are not thoroughly clear, it seems necessary to make Esmarch or plate cultures from the blood, the intestine, and the principal organs of the body, and also to inoculate animals with material from the lungs, spleen, intestine, etc. A single case thoroughly investigated according to modern bacteriological methods is of more value than many cases in which only stab-cultures have been made from one or two organs, or in which reliance is placed solely on the results of inoculating animals. Little reliance can be placed upon the results of experimental inoculations of swine with the suspected organisms of hog-cholera and of swine-plague in regions where the disease prevails, unless very strict precautions are taken in the selection and care of the experimental animals.

RUMINATION IN THE HUMAN SUBJECT.

IN the *London Medical Recorder* for Nov. 20, 1889, Dr. Ireland summarizes the contents of a paper on this curious phenomenon by Dr. Sievers in the *Finska Läkaresällskapets Handlingar*, No. 5, 1889.

This author first gives a *résumé* of the different opinions upon rumination since 1618 (when Fabricius ab Aquapendente published the first case of this affection) until the present time. He recalls that since the appearance of the classical work by Adrien Dumur on the "Paralysis of the Cardiac Orifice or Merycism," the most recent authors see in this affection a nervous moving of the stomach accompanied by more or less diminution of the tone of the cardiac orifice. He thinks, however, that the true nature of rumination has not yet been thoroughly studied. Like Johannessen, to whom we owe the most detailed examination of this subject, Dr. Sievers says, that, before drawing any conclusion, the details should be more minutely studied. But while the researches already made do not explain satisfactorily the nature of rumination, they furnish us with very important facts for the therapeutic treatment.

Dr. Sievers publishes three cases of rumination which he observed in private practice at Helsingfors. Besides these, so far as he knows, there are only three other cases of rumination mentioned in Scandinavia, and reported by Johannessen in *Zeitsch. für klin. Medicin*, Bänder X. and XII. In the first case described, the patient, aged twenty-seven, who had been a governess and sick-nurse, belonged to a very nervous family, though none of them suffered from insanity or any other grave disorder. She had previously enjoyed good health. She always ate very quickly, and did not properly masticate her food. It is now ten years since she commenced to ruminate her food, after a sea-voyage lasting from three to four days, during which time she had not defecated, owing to want of convenience. Five, ten, or thirty minutes after eating, the food is collected in little balls in the mouth in order to be subjected to a second mastication. The patient seems quite at ease during rumination. After an ordinary dinner the rumination lasts from an hour and a half to two hours. If she moves about, or even if she is disturbed, rumination begins sooner, and is more active. Trying to restrain the process brings on such distress that the patient is compelled immediately to give in. During rumination she prefers to be seated. She leans forward, and at every mouthful which returns she lowers her head.

On scrutinizing the abdomen during the act of ruminating, one notices a dimple-like depression under the ribs. This is accompanied by an uneasy sensation passing from right to left. This does not extend farther than about the cardiac orifice. The patient feels a slight shock, and the food returns to the mouth. The stomach was found to be moderately distended with air. There was no retardation of digestion, and no excessive secretion of gastric juice; but there was found to be unusual acidity of the contents of the stomach, owing to the increased production of hydrochloric acid. No lactic acid could be detected. For this patient Dr. Sievers prescribed a teaspoonful of Carlsbad salts before dinner and supper, and a teaspoonful of bicarbonate of soda after each meal. The diet was to consist of milk, eggs, meat, and a very little bread. Under this treatment there was a gradual improvement; and at the end of five weeks the rumination had entirely ceased, nor did it return after she had discontinued using the alkalies.

The second case was a priest sixty years old. He had always ruminated. His father, now eighty-eight, did the same. The process commenced after a meal, and lasted from two to three hours. He never tried to stop it, and does not think he could, as it goes on independently of his will. He did not desire medical treatment with a view to remove it.

The third case was a Jewess, thirty-five years old, of a highly neurotic family. Her father also ruminated; and one brother out of the family of nine occasionally did the same. She herself has ruminated from childhood. The food returns of itself. The act causes her no uneasiness, which would not be the case if she tried to resist it. She did not desire medical treatment. The contents of the stomach were found to be very acid.

In *La Psichiatria* (Fasc. III.–IV.) there is a paper on "Rumination," by Dr. Cantarano. He had opportunities of studying this affection in four idiots, two imbeciles, and three patients deeply demented. No uneasiness seems in these cases to have followed the process. Dr. Sievers, among other contributions to this curious subject, refers to the papers of Alt (*Berl. klin. Wochensch.*, 1888, Nos. 26 and 27) and of Boas (No. 31 same journal); and in the *Archives de Neurologie* (VII. 1884) the reader will find an interesting paper on "Merycism," by Drs. Bourneville and Séglas.

HIGHWAY IMPROVEMENT.

IN an address on highway improvement delivered before the Carriage Builders' National Association at Syracuse, N.Y., recently, Col. Albert A. Pope of Boston said that the best roads in the world to-day are those of England, France, and Germany, their excellence being due to the fact that those countries were the first to awaken from the long sleep of the dark ages, and that the growing rivalry between them necessitated attention to their roads, for the proper prosecution of both their military and their mercantile interests. In each country the roads early came under the national supervision, the results of which are seen in the most splendid highways in existence, costing the least to maintain, and in every way the most satisfactory and economical for those who use them.

No country has a greater road mileage in proportion to the population than the United States, according to Col. Pope; but while, with characteristic American push and hurry, the more extensive means of communication and intercourse have been provided, we

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